

CLAIMS

1. A method of depositing a material onto a work piece, comprising:
identifying a target surface on the work piece, the target surface encompassing an area of interest;
defining an electron-source surface proximal to but substantially exclusive of the target surface;
providing deposition gas over the target surface; and
irradiating at least a portion of the electron-source surface to generate secondary electrons projecting into a region over the target surface, said secondary electrons interacting with the deposition gas to deposit a layer of deposition material onto the target surface including the area of interest, wherein the area of interest in the target surface is not damaged by said irradiation.
2. The method of claim 1, wherein the area of interest encompasses a feature to be cross-sectionally analyzed.
3. The method of claim 2, wherein the feature is a line feature disposed substantially along the center of a rectangular shaped target surface.
4. The method of claim 1, wherein the work piece is a wafer having a surface with a feature to be cross-sectionally analyzed, the act of identifying a target surface includes defining a substantially rectangular shaped surface encompassing a portion of the line feature to be analyzed.
5. The method of claim 4, wherein the act of defining an electron-source surface includes defining a surface that substantially surrounds the target surface.

6. The method of claim 1, wherein the act of irradiating includes irradiating with an ion beam.

7. The method of claim 1, wherein the act of irradiating includes irradiating with an electron beam.

8. A method of depositing a material onto a work piece surface, comprising:
identifying a target surface on the work piece surface;
providing an auxiliary electron-source surface proximal to the target surface;
providing deposition gas over the target surface; and
irradiating at least a portion of the auxiliary electron source surface to generate secondary electrons emitting over the target surface to interact with the deposition gas to deposit a deposition layer over the target surface.

9. The method of claim 8, wherein the act of providing an auxiliary electron-source includes providing an auxiliary electron-source comprising a metallic surface that is part of a device for providing the deposition gas.

10. The method of claim 8, wherein the target surface encompasses a feature to be cross-sectionally analyzed.

11. The method of claim 10, wherein the feature is a line feature disposed substantially along the center of a rectangular shaped target surface.

12. The method of claim 8, wherein the work piece is a wafer having a surface with a feature to be cross-sectionally analyzed, and the act of identifying a target surface includes defining a substantially rectangular shaped surface encompassing a portion of the line feature to be analyzed.

13. The method of claim 12, wherein the act of providing an auxiliary electron-source surface includes providing a metallic surface that tracks a scanning beam around the target surface.

14. The method of claim 8, wherein the act of irradiating the auxiliary electron source includes irradiating it with an ion beam.

15. The method of claim 8, wherein the act of irradiating the auxiliary electron source includes irradiating it with an electron beam.

16. A system , comprising:

a stage for receiving a work piece having an upper surface that includes a target surface;

a column configured to controllably emit a beam onto the upper surface of the work piece, the beam, when striking the upper surface causing secondary electrons to be emitted therefrom;

a gas source to provide deposition gas at the target surface;

a controller coupled to the column to control the beam and position it over the work piece upper surface, and

a memory storage device adapted to provide the controller with instructions that when executed by the controller cause it to scan the beam onto an electron source surface proximal to but not part of the target surface to generate secondary electrons passing from the electron-source surface over the target surface for interaction with the deposition gas thereby causing a deposition layer to be deposited over the target surface without the beam being incident upon it.

17. The system of claim 16, wherein the electron-source surface is a metallic portion of the gas source.

18. The system of claim 16, wherein the electron-source surface is part of the upper surface of the work piece.

19. The system of claim 16, wherein the work piece is a wafer that includes a feature within the target surface.

20. The system of claim 19, wherein the column is a FIB column that emits a FIB beam, the memory storage device including instructions that cause the FIB beam to cut a slice from the feature after the deposition layer is deposited onto the targeted surface.

21. The system of claim 20, further comprising an SEM configured to image a cross-sectional view of the feature at a face exposed by the cut away slice.

22. The system of claim 16, further comprising one or more electrodes configured to create an electrostatic field that forces secondary electrons toward the target surface.

23. The system of claim 22, wherein the one or more electrodes generate the electrostatic field to track the beam around the target surface.

24. The system of claim 16, wherein the work piece comprises a silicon based wafer, the deposition gas comprises tungsten hexi-carbonyl, and the beam comprises gallium ions.

25. The system of claim 16, wherein the column emits electrons.

26. The system of claim 16, wherein the column emits photons.